9. Cancel claims 8 to 9 and 13 to 15 without prejudice or disclaimer.

REMARKS

Claims 1 to 7, 10 to 12 and 16 to 36 are pending. Claims 17 to 36 were withdrawn as directed to a non-elected invention. Claims 1 to 16 were examined. Reconsideration and allowance of claims 1 to 7, 10 to 12 and 16 are respectfully requested for the following reasons:

The Office Action objects to claims 14 and 15. Claims 14 and 15 have been cancelled. The objections to claim 14 and claim 15 should be withdrawn.

Claims 1 to 11 and 13 to 16 were rejected under U.S.C. §112, first paragraph and claims 1 to 16 were rejected under U.S.C. §112, first paragraph.

The Office Action states that "the specification, while being enabling for... polycarbonate substrate and a permeable polycarbonate film covering used for the catalytic production of aromatic carbonates... does not reasonably provide enablement for any apparatus... and any permeable film covering used for any chemical reaction." Claim 1 has been amended to a reactor plate "for the catalytic production of aromatic carbonates," "a permeable polycarbonate film covering" and a "polycarbonate substrate." Claims 2 to 11, 13 and 16 depend from claim 1. The amendment should overcome the rejection of claims 1 to 11 and 13 to 16 under U.S.C. §112, first paragraph.

The Office Action states that the specification is enabling for a one material, single substrate apparatus but not for a single substrate "composed of more than one type of material." Again, claim 1 has been amended to a "polycarbonate substrate." Claims 2 to 11, 13 and 16 depend from claim 1. The amendment should overcome the rejection of claims 1 to 16 under U.S.C. §112, first paragraph.

Claims 1 to 16 were rejected under U.S.C. §112, second paragraph.

The Office Action states that "reactor plate" (paragraph A), "substrate" (paragraph B), "reaction cells" (paragraph C) and "substrate with an array of reaction cells"

(paragraph D) are not defined in the specification and are indefinite. However, the terms "reactor plate," "substrate," "reaction cells" and "substrate with an array of reaction cells" are defined in the specification. See the specification page 2, lines 19 to 25, page 4, lines 6 to 26 with reference to the drawings, page 8, lines 1 to 12 and the drawings, FIGs. 1 to 5. Additionally, the terms "reactor plate," "substrate," "reaction cells" and "substrate with an array of reaction cells" are well-known terms in the combinatorial art. See for example, Cherukuri et al., 5,980,704.

The Office Action states that the claim 1, line 4 "one cell" (paragraph E and the claims 2 to 12 "permeable film* (paragraph F) have no antecedent basis. The claims have been amended to overcome this basis of rejection.

The Office Action states that "about," "preferably about." And "desirably about" in claims 2 to 7 are indefinite relative terms (paragraph G). Applicant traverses this rejection. One skilled in the chemical art would understand what is claimed in claims 2 to 7 in view of the specification. See Seattle Box Co., v. Industrial Crating & Packing, Inc., 731 F.2d 818, 221 USPQ 568 (Fed. Cir. 1984) and MPEP 2173.05(b). Relative terminology and in particular, the use of the term "about" does not render a claim indefinite. See Ex parte Eastwood, 163 USPQ 316 (Bd. App. 1968) and W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983). This basis of rejection should be withdrawn.

The Office Action states that the term "shallow cell" in claim 13 (paragraph H) is indefinite. Claim 13 has been cancelled.

The Office action states that "permeable film" is a relative term (paragraph I). Claim I has been amended to further define the "permeable film" as a "permeable polycarbonate film [that] selectively admits transport of a reactant but prohibits transport of a reaction product." Support for this amendment is found in the specification at page 4, line 27 to page 5, line 1. The amendment should overcome the paragraph I basis for rejection.

Claim 15 has been cancelled to overcome the paragraph I basis of rejection.

For these reasons, the rejection of claims 1 to 16 under U.S.C. §112, second paragraph should be withdrawn.

Claims 1 to 8, 12 to 14 and 16 were rejected under U.S.C. §102(b) over Valus et al. and claims 1 to 14 were rejected under U.S.C. §102(e) over Hirahara. Claim 15 was not rejected over Valus et al. or Hirahara. The limitations of claim 15 have been incorporated into claim 1 by amendment. Claims 2 to 7, 10 to 12 and 16 depend from claim 1. The rejections of claims 1 to 8, 12 to 14 and 16 under U.S.C. §102(b) over Valus et al. and the rejection of claims 1 to 14 under U.S.C. §102(e) over Hirahara should be withdrawn.

In view of the foregoing amendments and remarks, it is respectfully submitted that claims 1 to 7, 10 to 12 and 16 are allowable. Reconsideration and allowance are requested.

Should the Examiner believe that any further action is necessary in order to place this application in condition for allowance, he is requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,

Philip D. Freedman

Philip D. Freedman
Reg. No. 24,163
Philip D. Freedman PC
Customer Number 25101
6000 Wescott Hills Way
Alexandria, Virginia 22315-4747
(703) 313-0171
Fax: (703) 313-9322
Email: tekesq@tekesq.com

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CLEAN CLAIMS VERSION

1. A reactor plate for the catalytic production of aromatic carbonates, comprising:

a substrate with an array of reaction cells; and

a permeable polycarbonate film covering at least one of the cells to selectively permit transport of a reactant gas into the one cell while preventing transport of a reaction product out of the one cell;

wherein the permeable polycarbonate film selectively admits transport of a reactant but prohibits transport of a reaction product; and

wherein the at least one cell is a cell that is formed from a polycarbonate substrate with two opposing walls comprising permeable polycarbonate film.

Sub B1

a1

2. The reactor plate of claim 1, wherein the permeable polycarbonate film is characterized by a diffusion coefficient of about 5 X 10^{-10} to about 5 X 10^{-7} cc(STP)-mm/cm^2 –sec-cmHg.

3. The reactor plate of claim 1, wherein the permeable polycarbonate film is characterized by a diffusion coefficient of about 1 X 10^{-9} to about 1 X 10^{-7} cc(STP)-mm/cm^2 –sec-cmHg.

4. The reactor plate of claim 1, wherein the permeable polycarbonate film is characterized by a diffusion coefficient of about and preferably about 2 X 10^{-8} to about 2 X 10^{-6} cc(STP)-mm/cm^2 –sec-cmHg.

5. The reactor plate of claim 1, wherein the permeable polycarbonate film is about .0002 to about .05 mm thick.

6. The reactor plate of claim 1, wherein the permeable polycarbonate film is about .005 to about .04 mm thick.

Cont sub B1 Concl

7. The reactor plate of claim 1, wherein the permeable polycarbonate film is , desirably about .01 to about .025 mm thick.

Sub D3

10. The reactor plate of claim 1, wherein the permeable polycarbonate film is a monofilm, coextrusion, composite or laminate.

11. The reactor plate of claim 1, wherein the permeable polycarbonate film selectively admits transport of a reactant and prohibits transport of a reaction product.

a2

12. The reactor plate of claim 1, wherein the permeable polycarbonate film selectively admits transport of oxygen and carbon monoxide and prohibits transport of a diaryl carbonate.

Sub D4

16. The reactor plate of claim 1, wherein the at least one cell is a concave bottomed cell with permeable film cover.

17. A method, comprising:

providing a reactor plate comprising a substrate with an array of reaction cells, at one least one cell of the array comprising a cavity and a permeable film cover; and

conducting a combinatorial high throughput screening (CHTS) method with the reactor plate.

18. The method of claim 17, wherein the CHTS method comprises a step of (a) reacting a reactant under a set of catalysts or reaction conditions; and (b) evaluating a set of products of the reacting step.

19. The method of claim 17, comprising providing a cell according to permeability of the film and robustness and rate of the reacting step.

20. The method of claim 17, comprising providing a cell so that rate of diffusion of gas through the membrane is greater than the rate of gas uptake of the reaction in the reacting step.

21. The method of claim 17, wherein the CHTS method comprises (A) an iteration of steps of (i) selecting a set of reactants; (ii) reacting the set and (iii) evaluating a set of products of the reacting step and (B) repeating the iteration of steps (i), (ii) and (iii) wherein a successive set of reactants selected for a step (i) is chosen as a result of an evaluating step (iii) of a preceding iteration.

22. The method of claim 17, wherein the CHTS method comprises (A) (i) simultaneously reacting reactants, (ii) identifying a multiplicity of tagged products of the reaction and (B) evaluating the identified products after completion of a single or repeated iteration (A).

23. The method of claim 17, wherein the CHTS method comprises (a) reacting a reactant under a set of catalysts or reaction conditions; (b) evaluating a set of products of the reacting step, and reiterating (a) according to results of the evaluating (b).

24. The method of claim 17, wherein the CHTS method comprises (a) reacting a reactant at a temperature of about 0 to about 150°C.

25. The method of claim 17, wherein the CHTS method comprises (a) reacting a reactant at a temperature of about 50 to about 140°C.

26. The method of claim 17, wherein the CHTS method comprises (a) reacting a reactant at a temperature of about 75 to about 125°C.

27. The method of claim 17, wherein the CHTS method comprises effecting parallel chemical reactions of reactants or catalysts within reaction cells of the array.

28. The method of claim 17, wherein the CHTS method comprises effecting parallel chemical reactions on a micro scale on reactants or catalysts within reaction cells of the array.

29, The method of claim 17, wherein the CHTS method comprises effecting parallel chemical reactions on catalyst systems within reaction cells of the array with reactants that permeate through the film cover.

30. The method of claim 29, wherein at least one catalyst system comprises a Group VIII B metal.

31. The method of claim 29, wherein at least one catalyst system comprises palladium.

32. The method of claim 29, wherein at least one catalyst system comprises a halide composition.

33. The method of claim 29, wherein at least one catalyst system comprises an inorganic co-catalyst.

34. The method of claim 29, wherein at least one catalyst system comprises a combination of inorganic co-catalysts.

35. The method of claim 17, further comprising depositing a reactant within the at least one cell and effecting a chemical reaction of the reactant with carbon monoxide and oxygen that permeates through the film.

36. The method of claim 35, wherein the film is a polycarbonate, PET or polypropylene.